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TECHNICAL MEMORANDUM

(TM Series)

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SAGE Unique-to-Site Environmental SYSTEM
Data and Equipment Assignments
Duluth ADS DEVELOPMENT
by DDC
D. M. McDaniel MAY 27 1963 2500 COLORADO AVE.
22 March 1963 SANTA MONICA
TISIA A CALIFORNIA

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INTRODUCTION

This volume of the TM(ADC)820 Series contains the official SAGE unique-to-site environmental data and equipment assignments which are to be used in adapting the Model 9.1 computer programs and in Simplex Data Distribution Unit terminal assignments for the Duluth Air Defense Sector. Certain adaptation data such as facility locations, characteristics, and other related data which apply to all sectors, is presented in volumes 3 through 7 of this TM series. The reader is referred to Volume 0 of this series for a detailed list of contents of all volumes.

SAGE Unique-to-Site Equipment Review (USER) Committee signatures appear on page 5 of this document, with initials indicating approval, concurrence or review, as appropriate.

ADCM 55-32 currently defines adaptation data as being of two categories: 1) ADC Controlled Data; and 2) Field Controlled Data. A portion of this document is ADC Controlled Data and therefore constitutes a reason for the ADC Foreword page and NORAD Preface page authorizing the use of this data. However, since this document also contains Field Controlled Data, e.g.: "Times-2" display data; Manual Input data; etc, it is noted here that the aforementioned military preface and foreword page do not in any way usurp the position of the Division and Sector Commanders as delegated in ADCM 55-32, but instead reflect recognition of data forwarded by those Commanders to SDC.

Discrepancies noticed in any part of this document by SDC on-site programming teams should be forwarded to the authors utilizing current established procedures. Revisions to this document will be published as data changes occur or when practical. Changes to previous data will be indicated by use of a " ▷ " next to the data change.

SERIES CONTENTS

VOLUME	0	Series Description
VOLUME	1	Adaptation I/O Limits and Drum Channel Requirements
VOLUME	2	Sector Environment Summaries
VOLUME	3	Sector and Region Positional Data
VOLUME	4	Radar Adaptation Data
VOLUME	5	Voice and Data-Link Communications Adaptation Data
VOLUME	6	Airbase and BOMARC Squadron Adaptation Data
VOLUME	7	ADA Site Adaptation Data
VOLUME	10	Unified Adaptation Guide for Region and Sector Data
VOLUMES through	250 through 351	SAGE Unique-To-Site Environmental Data and Equipment Assignments

LIST OF EFFECTIVE PAGES

This page is a reference of changes to this volume and contains a complete index of all effective pages.

PAGE NO	CHANGE LETTER	PUBLICATION DATE	PAGE NO	CHANGE LETTER	PUBLICATION DATE
1 - 2	A	22 Mar 63			
3 - 4	Basic	15 Nov 62			
5	Basic	15 Nov 62			
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7	Basic	15 Nov 62			
8	A	22 Mar 63			
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10-11	A	22 Mar 63			
12	Basic	15 Nov 62			
13	A	22 Mar 63			
14-17	Basic	15 Nov 62			
18	A	22 Mar 63			

USER COMMITTEE SIGNATURES

	APPROVAL	CONCURRENCE	REVIEW
APASTO	<i>J. G. Marmon, Lt. Col</i>	<i>J. G. Marmon, Lt. Col</i>	
SDC (DAS)	<i>D. J. Rogers</i>	<i>D. J. Rogers</i>	
WE/ADES	<i>C. L. Lynn, Jr.</i>		<i>C. L. Lynn, Jr.</i>
ITEM	<i>D. A. Lee</i>		<i>D. A. Lee</i>

The SAGE Unique-to-Site Equipment Review (USER) Committee signatures appearing on this page only apply to the following sections:

Section 2.4	LRI drum channel assignments
Section 6.2	Lateral-Tell input channel assignments
Section 6.3	Ground-to-ground data link output assignments
Section 6.4	Ground-to-air data link output assignments
Section 6.5	Teletype output assignments

All other sections of this document need not be reviewed by the USER committee. This page will only be reissued when changes to the above mentioned sections are made.

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1.0 SECTOR POSITIONAL DATA

SECTOR - DULUTH

REGION - 30TH

AMP NO. 002

1.1 SECTOR PROGRAM BOUNDARIES

1.1.1 MODE I BOUNDARY

REF	LATITUDE	LONGITUDE
01	055 00 00	088 00 00
02	050 00 00	088 00 00
03	043 35 00	091 10 00
04	043 30 00	094 00 00
05	049 00 00	095 09 00
06	055 00 00	095 09 00
07	OPEN TO NORTH	

1.1.2 MODE II BOUNDARIES

MODE IIA - SAULT STE MARIE *

REF	LATITUDE	LONGITUDE	REF
01	055 00 00	080 30 00	01
02	048 00 00	080 30 00	02
03	045 00 00	080 30 00	03
04	044 06 00	085 00 00	04
05	043 40 00	086 50 00	05
06	043 37 30	089 00 00	06
07	043 35 00	091 10 00	07
08	043 30 00	094 00 00	08
09	049 00 00	095 09 00	
10	055 00 00	095 09 00	
11	OPEN TO NORTH		

MODE IIB - GRAND FORKS

REF	LATITUDE	LONGITUDE
01	055 00 00	088 00 00
02	050 00 00	088 00 00
03	043 35 00	091 10 00
04	043 30 00	094 00 00
05	043 30 00	094 30 00
06	043 30 00	098 00 00
07	055 00 00	098 00 00
08	OPEN TO NORTH	

*BASED ON INITIAL CONFIGURATION OF SMADS PRIOR TO OTADS OPS DATE

1.2 MAJOR WORLD GEOREFS SURROUNDING X1 AREA

SWITCH CODE	GEOREF	SWITCH CODE	GEOREF	SWITCH CODE	GEOREF
1	FJ	4	GJ	7	HJ
2	FK	5	GK	8	HK
3	FL	6	GL	9	HL

1.3 ADJACENT AUTOMATIC AND MANUAL SECTORS

AUTOMATIC SECTOR NAME	AUTO DSG.	SECTOR REF.NO. (EQ.ID.)	D/L TIED	AMP NO.	SWITCH CODE	MAN LTR. DSG.	MANUAL SECTOR NAME **
CHICAGO	K	10	YES	007	0 *	1	
SYRACUSE	Y	4		003	2		
DETROIT	G	3		006	3	UF	ARMSTRONG
SIOUX CITY	L	4		022	4	UD	SIOUX LOOKOUT
MINOT	P	6		019	5	TF	BEAUSEJOUR
S.S.MARIE	V	6	YES	014	6		
OTTAWA	M	7		027	7		
GRAND FORKS	T	8	YES	011	8		
					9		

*SWITCH NO. 0 ON 10PB MODULES AND SWITCH NO. 10 ON 15PB MODULES

**ONLY MDC'S WITH DC TTY OUTPUT ARE INDICATED

1.4 LAND SEA LINES - NONE

1.5 AIR DEFENSE IDENTIFICATION ZONE - CADIZ

REF		LATITUDE	LONGITUDE
01	NORTHERN	052 00 00	102 00 00
02		054 00 00	096 00 00
03		054 00 00	078 00 00
01	SOUTHERN	049 00 00	100 00 00
02		051 00 00	096 00 00
03		051 00 00	078 00 00

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1.6 SECTOR MINIMUM ENROUTE ALTITUDE. 2500 FEET

1.7 TACAN TRANSMITTER NEAREST SECTOR CENTER

LATITUDE	LONGITUDE
046 50 01	092 10 57

1.8 MAGNETIC VARIATION LINES

MAGNETIC VARIATION AT SECTOR CENTER 2 DEGREES EAST

LINE NO.	NORTHERN POINTS			SOUTHERN POINTS		
	VARIATION	LATITUDE	LONGITUDE	LATITUDE	LONGITUDE	
1	8 DEG E	055 00 00	096 32 00	043 00 00	095 25 00	
2	6 DEG E	055 00 00	095 27 00	043 00 00	093 20 00	
3	4 DEG E	055 00 00	094 22 00	043 00 00	090 06 00	
4	2 DEG E	055 00 00	093 26 00	043 00 00	088 50 00	
5	0 DEG	055 00 00	092 29 00	043 00 00	086 33 00	
6	2 DEG W	055 00 00	091 19 00	044 00 00	085 20 00	
7	4 DEG W	055 00 00	090 08 00	044 00 00	083 24 00	
8	6 DEG W	055 00 00	088 57 00	044 00 00	081 27 00	
9	8 DEG W	055 00 00	087 46 00	045 00 00	079 55 00	

1.9 X2 DISPLAY DATA

X2 DISPLAY CENTER	
LATITUDE	LONGITUDE
049 44 55	090 03 29

X2 DISPLAY VERTICES	
LATITUDE	LONGITUDE
055 40 48	078 24 03
042 46 59	081 14 50
042 53 34	099 03 56
055 50 10	101 31 30

1	NE
2	SE
3	SW
4	NW

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2.0 RADAR DATA

2.1 LONG RANGE RADARS,
LRR-HF-ALRR

MULTIPLEXED-GAP FILLER RADARS

SWCH. CODE*	SITE DESIG.	NO. OF TIED LTR. HF'S DSG.			AMP NO.	SWCH. CODE	SITE DESIG.	SWCH. CODE	SITE DESIG.
		0	1	2				3	
▷ 0	P-34	2	A	I	IIA 093	0	P-34A	3	
						1		4	P-34E
						2		5	P-34F
1	**P-35	2	B	I	094	0	P-35G	3	
						1	P-35B	4	
						2	P-35C	5	P-35F
2	C-14	2	C	IIA/OL	012	0		3	
						1	C-14B	4	
						2	C-14C	5	
3	**SM-132	2	D	I	148	0	SM-132A	3	
						1		4	
						2		5	
▷ 4	**P-69	2	E	I	123	0	P-69B	3	P-69D
						1	P-69C	4	
▷ 5	P-16	2	F	IIA/OL	073	0	P-16A	5	
						1		3	
						2		4	
6	P-19	2	G	IIA/OL	078	0	P-19A	3	P-19D
						1	P-19B	4	
						2	P-19C	5	P-19N
▷ 7	P-66	2	H	IIA	121	0	P-66A	3	
						1		4	
						2		5	
8	**SM-138	2	J	I	151		—		
9	P-17	2	K	IIIB/OL	075	0	P-17A	3	
						1	P-17B	4	
						2		5	
10	P-18	2	L	IIIB/OL	076				
▷ 11	**C-16	2	M	I	015	0	C-16A	3	C-16D
▷ 12	**C-15	2	N	I	015	1	C-16B	4	
						2	C-16C	5	C-16E
13	C-17	2	P	IIIB/OL	016				

*SAME AS REFERENCE NO. MINUS 1, ID CODE, AND WARNING LIGHT NUMBER. TO OBTAIN LRR PROGRAM CHANNEL NUMBER ADD 35, TO OBTAIN MKX PROGRAM CHANNEL NUMBER ADD 49

** 6 LRR'S WITH THE MOST MODE I COVERAGE.

▷ GFR IDENTITY NUMBER AND SWITCH CODE BASED ON IMPLEMENTATION OF SPCR 1579

2.2 GAP FILLER RADARS

GFR CH NO	SITE IDENT	AMP NO.	TIED		GFR CODE **
			LRR NO.	SWCH CODE	
0	P-35B	I	099	1	1
1	P-35C	I	100	1	2
2	P-69B	I	131	4	1
3	P-69C	I	132	4	2
4	P-69D	I	133	4	3
5	SM-132A	I	160	3	0
6	P-35F	I	101	1	5
7	P-17B	IIIB/OL	069	9	1
8	P-35G	I	182	1	0
9	C-16E	I	135	11	4
10	C-16D	IIIA/OL	134	11	3
11	C-16B	I	031	11	1
12	C-16C	I	032	11	2
13	C-16A	I	030	11	0
14	P-16A	IIIA/OL	067	5	0
15	P-19A	IIIA	070	6	0
16	P-19B	IIIA	071	6	1
17	P-19C	IIIA	072	6	2
18	P-19D	IIIA/OL	073	6	3
19	P-66A	IIIA	122	7	0
20					
21					
22					
23	P-17A	IIIB	068	9	0
24	C-14B	IIIA	028	2	1
25	C-14C	IIIA	029	2	2
26	P-34A	IIIA	096	0	0
27	P-34E	IIIA	097	0	4
28	P-34F	IIIA	098	0	5
29					
30					
31	P-19N	IIIA	075	6	5
32	THRU 34	BLANK			

*SAME AS REFERENCE NUMBER MINUS 1

**GFR SWITCH CODE BASED ON IMPLEMENTATION OF SPCR 1579

2.3 LOCATION OF POINT NOT WITHIN ANY HF SHADOW AREA

NO SUCH POINT DUE TO SITE CONSTRUCTION PROJECTS

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2.4 LRR DRUM CHANNEL ASSIGNMENTS

SODU CONNECTIONS

SITE LOCATION	TELCO TERMINAL	I.B.M. TERMINAL	CHANNEL NUMBER	SITE IDENT
DRUM FIELD 1 (35)				
P-35	3F- 1	3F- 1	1	0001
	3F- 2	3F- 2	2	0001
P-66	3F- 3	3F- 3	3	0111
	3F- 4	3F- 4	4	0111
P-69	3F- 5	3F- 5	5	0100
	3E- 6	3E- 6	6	0100
SM-132	3E- 7	3E- 7	7	0011
	3E- 8	3E- 8	8	0011
C-16	3E- 9	3E-11	11	1011
	3E-10	3E-12	12	1011
C-15	3D-11	3D-13	13	1100
	3D-12	3D-14	14	1100
C-17	3D-13	3D-15	15	1101
	3D-14	3D-16	16	1101
	3D-15	3D-17	17	
	3C-16	3C-18	18	
DRUM FIELD 2 (37)				
SM-138	3C-17	3C-19	19	1000
	3C-18	3C-20	20	1000
P-17	3C-19	3C-21	21	1001
	3C-20	3C-22	22	1001
P-19	3B-21	3B-23	23	0110
	3B-22	3B-24	24	0110
P-16	3B-23	3B-25	25	0101
	3B-24	3B-26	26	0101
P-18	3B-25	3B-29	29	1010
	3A-26	3A-30	30	1010
P-34	3A-27	3A-31	31	0000
	3A-28	3A-32	32	0000
C-14	3A-29	3A-33	33	0010
	3A-30	3A-34	34	0010
	4F-31	4F-35	35	
	4F-32	4F-36	36	

3.0 AIRBASE DATA

3.1 MANNED INTERCEPTOR AIR BASES AND SQUADRONS

REF #	NAME	DSG	MODE-TYPE			SWCH	SQUADRONS	AMP		
			I	IIA	IIB				MODE	CODE
01	DULUTH MINN	DLH	S	S	S	I	14	11 FIS	VN	032
02	K.I.SAWYER MICH	SAW	R	S	R	IIA	13	179 ANG	ML	032
03	GRAND FORKS ND	RDR	R	R	S	IIB	12	62 FIS	EK	063
04	KINCHELOE AFB MICH	INR	R	S	R	IIA	11	18 FIS	LL	048
05	WURTSWICH AFB MICH	OSC	R	S	R	IIA	10	438 FIS	KH	064
06	MINN-ST PAUL MINN	MSP	S	S	S	I	9	445 FIS	JK	170
07	FARGO ND	FAR	R	R	S	IIB	8	178 ANG	MP	037
08	SIOUX FALLS SD	FSD	R	R	S	IIB	7	175 ANG	PP	143
09	LAKEHEAD ONT	GT	S	S	S	I	6			068
10	VOLK AFB WISC	VOK	R	S	R	IIA	5			163
11	SIOUX CITY, IOWA	SUX	R	R	R	OL	4			142
12	DES MOINES, IOWA	DSM	R	R	R	OL	3			028
13	TRUAX AFB, WISC	MSN	R	R	R	OL	2			155
14	ALPENA MICH	APN	R	S	R	IIA	1			002
15	WINNIPEG MAN	WG	R	R	S	IIB	0			169

*SAME AS A/B CHANNEL NUMBER PLUS ONE

3.2 SAC/MATS BASES

NAME	3 LTR DESIG	AMP	
		MODE#	NO.
1 DULUTH, MINN	DLH	I	109
2 MINN-ST PAUL, MINN	MSP	I	063
3 GRAND FORKS, ND	RDR	II	038
4 KINCHELOE, MICH	INR	II	046
5 K.I.SAWYER AFB	SAW	II	080
6 WURTSWICH, MICH	OSC	II	100

*MODE IS DEFINED HERE AS INCLUDING A 50 MILE OVERLAP ZONE

4.0 BOMARC DATA

4.1 BOMARC A BASES - NONE

4.2 BOMARC B BASES

REF	NAME	MODE	EQ.ID.	SQ.	SQ.	CHAN.	ID.	2	LTR.	AMP	PARENT	MODE	II
				NO.*	NO.						DESIG.	NO.	SECTOR
1	DULUTH	I	23	3	0	HM	011	DU		GF			
2	KINCHELOE	IIA	24	10	1	TM	014	SM		DU			
3	NORTH BAY	LTEL	NOT TIED	6		LM	021	SM**					
4	NIAGARA	LTEL	NOT TIED	8		NM	020	SY		DE			
5	LA MACAZA	LTEL	NOT TIED	11		UM	015	BA**					

*TRACK MODULE SWITCH CODE

**BASED ON INITIAL CONFIGURATION PRIOR TO OTTAWA OPS DATE

5.0 ARMY AIR DEFENSE COMMAND POST(AADCP) DATA

SWCH CODE*	NAME	OPTION	MODE	EQ.ID.	AMP	PARENT	MODE II	OVERLAP
					NO.	SECTOR	CONTROL	COVERAGE
1	MINN-ST PAUL	AUTO	I	12	014	DU	GF	CH,SM,SC
2								
3								
4								
5								
6								
7								
8	CHICAGO	LTL	OL		003	CH	DE	SM,DU
9	MILWAUKEE	LTL	OL		013	CH	DE	SM,DU
10	LINCOLN-OFF.	LTL	OL		010	SC	CH	GF,DU

*SAME AS AADCP NUMBER

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6.4 GROUND TO AIR DATA LINK OUTPUT ASSIGNMENTS

OUTPUT LINE	TELCO TERMINAL	I.B.M. TERMINAL	FUNCTION
OUTPUT SECTION ADDRESS 1			
G/A-1	2F- 1	2F- 1	FD RADIO SITES
G/A-2	2F- 2	2F- 2	
OUTPUT SECTION ADDRESS 6			
G/A-3	2F- 8	2F- 8	BOMARC A SITES
G/A-4	2F- 9	2F- 9	
OUTPUT SECTION ADDRESS 7			
G/A-5	2F-10	2F-10	
G/A-6	2F-11	2F-11	
OUTPUT SECTION ADDRESS 5			
G/A-7	2F-13	2F-13	TD RADIO SITES P-16, P-18, P-19, P-17, P-34, P-35, P-66, P-69, SM-132, SM-138, C-14, C-15, C-16, C-17
G/A-8	2F-12	2F-12	

6.5 TELETYPE OUTPUT ASSIGNMENTS
OUTPUT SECTION ADDRESS 3

OUTPUT LINE	TELCO TERMINAL	I.B.M. TERMINAL	ORA	SITE NAME	TYPE
TTY- 1	2B- 1	2B- 1			
TTY- 2	2B- 2	2B- 2	1	FINLAND, MINN	NCC
TTY- 3	2B- 3	2B- 3	2	BEAUSEJOUR, MAN	MDC
TTY- 4	2B- 4	2B- 4	3	SIOUX LOOKOUT, ONT	MDC
TTY- 5	2B- 5	2B- 5	4	ARMSTRONG, ONT	MDC
TTY- 6	2B- 6	2B- 6			
TTY- 7	THRU TTY-23 NOT USED				
TTY-24	2B-24	2B-24	23	QUALITY CONTROL	
TTY-25	2B-25	2B-25	24	FIX	

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6.6 LATERAL-TELL ROUTING TABLE - FIRST STOP

SECTOR DSG	SECTOR REFERENCE NUMBER				
	1ST ROUTE	2ND ROUTE	3RD ROUTE	4TH ROUTE	5TH ROUTE
1					
2					
3	10		6		
4	10		6		
5					
6	10		6		
7	10				
8	10		8		
9	10		6		
10					
11		8			
12					
13					
14		6			
15					
16					
17					
18					
19		8	10		
20		8	10		
21					
22		10	8		
23					
24					
25					
26					
27					
28					
29					
30					
31					

7.0 MANUAL INPUTS

SSR NO.	NAME/IDENT	TYPE	55-20		SSR NO.	NAME/IDENT	55-20	
			DESIG				TYPE	DESIG
01	C-15	MDC	UF		10			
02	C-16	MDC	UD		11			
03	C-17	MDC	TF		12			
04	P-69	NCC	UB		13			
05	C-14	MDC	VE		14			
▷ 06	C-119	MDC	VF		15		55-20	TYPE
07	BIRD	MCL	HB		16			
08	CRANBERRY PORT.	MCL	HC		17			

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TM(ADC)820/303/00A

DISTRIBUTION LIST

PIR-A #4 WECO Group A - New York (5 and 1 vellum)
 WECO - Santa Monica (room 3311B)

PIR-A #5 IBM - Kingston (6 and 1 vellum)
 IBM - Santa Monica (room 3311A)

PIR-A #31 ADC - CCDSO (3)
 AD4SY

PIR-A #36 ADC-DIV SEC HQ
 30th DIV HQ
 SMADS
 DUADS
 DEADS
 CHADS
 GFADS

PIR-A #41 ADC HQ and NORAD
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PIR-A #48 HQ ESD
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APASTO

AD8CP-E
AD8CP-T

RCAF

Air Officer Commanding, ADC HQ (3)
RCAF Station
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Chief of Air Staff AF HQ
Attn: DROP/RDP 3
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SYSTEM DEVELOPMENT CORPORATION

USG Sec 2 (3)	4345
USG DAS (6)	4365
PPB SSG System Data (2)	20157
STB SSG Run Designer	4770
PTG Control Unit	Phoenix
FIB HQ	24191

FIB Group Head	- Truax
FIB Team Heads	- Truax
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	Duluth
	Sawyer
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System Development Corporation,
Santa Monica, California
SAGE UNIQUE-TO-SITE ENVIRONMENTAL
DATA AND EQUIPMENT ASSIGNMENTS
DULUTH ADS.
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